

BLACK DIAMOND SCHOOL OF ENGINEERING, JHARSUGUDA

LESSON PLAN

Session (2022-2023)

Discipline: Civil/Elect/CSE/ETC	Semester: 1st, W/2022	Name of the Faculty: Mrs. Sipra Patel
Subject: Engineering Mechanics (Th4)	No. of days/week: 04	Start Date: 24.10.2022 End Date: 20.02.2023

Week	Class Day	Theory/Practical Topics
1st	1st	Fundamentals of Engineering Mechanics: Definitions of Mechanics, Statics, Dynamics, Rigid Bodies. Force, its effect and its units. Classification of force system.
	2nd	Graphical representation of force, Characteristics of force. Principle of transmissibility and superposition.
	3rd	Action & Reaction Forces. FBD.
	4th	Resolution of a Force: Definition, Method of Resolution, Types of Component forces, Perpendicular & non-perpendicular component.
2nd	1st	Composition of Forces: Definition, Resultant Force, Method of composition of forces. Parallelogram law of forces.
	2nd	Numerical using Parallelogram law of forces.
	3rd	Method of resolution. Numerical
	4th	Numerical using Method of resolution.
3rd	1st	Graphical Method: Introduction, Space diagram, Vector diagram, Triangle and Polygon law of forces.
	2nd	<i>Review Class</i>
	3rd	Moment of Force: Definition, Geometrical meaning of moment of a force, measurement of moment of a force &

		its S.I units. Classification of moments according to direction of rotation, sign convention. Law of moments,
	4th	Numerical
4 th	1st	Varignon's Theorem. Numerical using Varignon's Theorem
	2nd	<i>Assignment Evaluation/Class Test</i>
	3rd	Couple – Definition, S.I. units, measurement of couple, properties of couple
	4th	<i>Review Class</i>
5 th	1st	Equilibrium: Definition, condition of equilibrium, Analytical & Graphical conditions of equilibrium for concurrent, non-concurrent & Free Body Diagram.
	2nd	Lami's Theorem (Statement), Numerical using Lami's theorem.
	3rd	<i>Review Class</i>
	4th	Friction: Definition of friction, Frictional forces, Laws of Friction, Advantages & Disadvantages of Friction. Limiting frictional force, Coefficient of Friction.
6 th	1st	Angle of Friction & Repose. Friction on horizontal plane.
	2nd	Numerical
	3rd	Friction on Inclined plane
	4th	Numerical
7 th	1st	Ladder friction. Numerical
	2nd	Wedge friction. Numerical
	3rd	<i>Review Class</i>
	4th	<i>Assignment Evaluation/Class Test</i>
8 th	1st	Centroid – Definition, Moment of an area about an axis, centroid of geometrical figures such as square, rectangle etc. Centroid of composite figures.
	2nd	Numerical - Centroid of composite figures.
	3rd	Numerical - Centroid of Cutout sections.
	4th	Moment of Inertia: Definition, Parallel axis & Perpendicular axis Theorems.
9 th	1st	M.I. of plane lamina, M.I of rectangular section (Derivation), M.I of other geometrical sections (Formula only).

	2nd	Numerical – M.I of composite figures.
	3rd	Numerical – M.I of composite figures.
	4th	<i>Review Class</i>
10 th	1st	<i>Assignment Evaluation/Class Test</i>
	2nd	Simple Machines: Definition of simple and compound lifting machine. M.A, V.R. & efficiency relation between them.
	3rd	Self locking and reversible machine. Law of Machine. Friction loss.
	4th	Numerical: To determine M.A, V.R, efficiency and friction loss.
11 th	1st	Numerical: To determine law of machine.
	2nd	Velocity ratio of simple and compound gear Train.
	3rd	Study of simple axle & wheel. Numerical
	4th	Study of Screw Jack. Numerical
12 th	1st	Study of single purchase crab winch & double purchase crab winch. Numerical
	2nd	Worm & Worm Wheel. Numerical Types of hoisting machine
	3rd	<i>Review Class</i>
	4th	<i>Assignment Evaluation/Class Test</i>
13 th	1st	Kinematics & Kinetics, Newton's Laws of Motion, Equations of motion
	2nd	Numerical related to laws of motion.
	3rd	Numerical related to equations of motion.
	4th	De-Alembert's Principle, Related Numerical
14 th	1st	Work, Power, Energy & its Engineering Applications, Kinetic & Potential energy & its application. Conservation of energy.
	2nd	Numerical related to potential and kinetic energy.
	3rd	Impulse and Momentum, Collision of elastic bodies. Conservation of momentum. Coefficient of restitution.
	4th	Numerical related to impulse and momentum.
15 th	1st	Numerical related to collision and coefficient of restitution.
	2nd	<i>Review Class</i>

	3rd	<i>Discussion Of Previous Year Questions</i>
	4th	<i>Discussion Of Previous Year Questions</i>